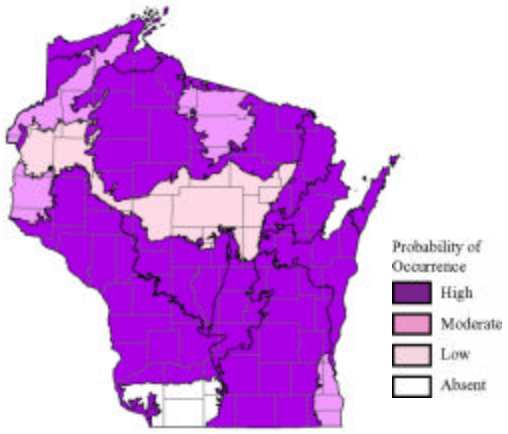
3.1.3.3 Individual Fish Species of Greatest Conservation Need Summaries

Lake Sturgeon (*Acipenser fulvescens*)

Species Assessment Scores*

State rarity:	3
State threats:	3
State population trend:	2
Global abundance:	4
Global distribution:	5
Global threats:	3
Global population trend:	4
Mean Risk Score:	3.4
Area of importance:	5

* Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.



Ecological Landscape Associations
Please note that this is not a range map. Shading does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

Landscape-community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Lake Michigan
Central Lake Michigan Coastal	Warmwater rivers
Central Sand Hills	Impoundments/Reservoirs
Central Sand Hills	Inland lakes
Central Sand Hills	Warmwater rivers
Central Sand Plains	Impoundments/Reservoirs
North Central Forest	Impoundments/Reservoirs
North Central Forest	Inland lakes
North Central Forest	Warmwater rivers
Northeast Sands	Warmwater rivers
Northern Lake Michigan Coastal	Lake Michigan
Northern Lake Michigan Coastal	Warmwater rivers
Northwest Lowlands	Warmwater rivers
Southeast Glacial Plains	Impoundments/Reservoirs
Southeast Glacial Plains	Inland lakes
Southeast Glacial Plains	Warmwater rivers
Superior Coastal Plain	Lake Superior
Western Coulee and Ridges	Warmwater rivers

Threats and Issues

- Dam flow regulation, especially seasonal and daily altered flow regimes by hydro-electric dams, threaten this species by decreasing sturgeon spawning success.
- Dams threaten this species by destroying or degrading spawning and rearing habitats, fragmenting habitat and populations, acting as barriers to spawning migrations, preventing mature adults from reaching historical spawning grounds, and by reducing the ability of juveniles and adults to migrate downstream to reach historic feeding habitats.

- Overharvest (and also potential illegal harvest on spawning grounds) threatens this species. For example, current fisheries regulations on Lake Winnebago have led to overharvest by recreational anglers (via spear fishing) in two of the last five years, and harvest on the Menominee River is suspected to be excessive.
- Non-point and point source pollution of rivers threaten this species in a variety of ways, including impacts of contaminant exposure and bioaccumulation on populations of this long-lived species and siltation of spawning grounds.
- Additional information on the biology, population trends, and effects of targeted and incidental catch on populations is needed to better manage this species in Wisconsin.
- Alteration of the Mississippi River and the mouths of Great Lakes tributaries for the purposes of commercial navigation threaten this species by fragmenting populations, destroying or blocking access to spawning grounds, and degrading rearing habitat.

Priority Conservation Actions

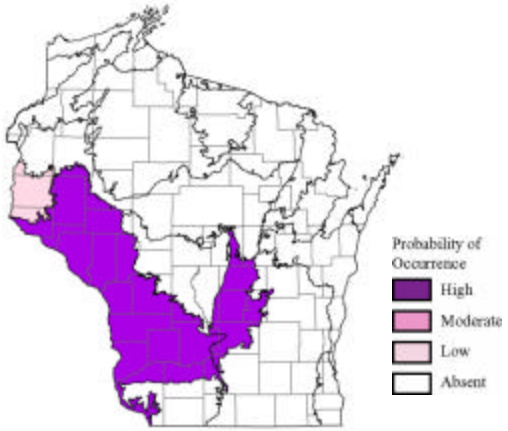
- Fish passage at dams, and removal of dams where possible, is needed to improve habitat in fragmented river systems and connect isolated lake sturgeon populations.
- Improved dam operations, including proper water flow management, would benefit this species.
- Reintroduction projects to re-establish lake sturgeon in isolated areas from which they have been extirpated would benefit this species, but must be done carefully with regard to genetic, hatchery and related concerns as outlined in the Wisconsin DNR Lake Sturgeon Management Plan and the Lake Michigan Committee's (GLFC) draft Lake Michigan Lake Sturgeon Rehabilitation Plan.
- Sustainable fisheries harvest regulations are needed to ensure that individual populations are not overharvested; this is particularly important because of the longevity of the species (up to 150 years or more), long period required before first spawning (14-23 years for females), and potentially long intervals between spawning (4-6 years for females). The nature of the lake sturgeon fishery and current methods of regulation may make this difficult in at least some locations (e.g., recreational spearfishery in Lake Winnebago and hook and line fisheries in a few river systems, including the Menominee, Wisconsin, Chippewa, and St. Croix).
- Information on population trends, reproduction, recruitment, seasonal migration patterns, and the success of reintroduction efforts is needed to better information and focus management and conservation efforts for lake sturgeon in Wisconsin.
- Information is needed on the genetic composition of disjunct spawning populations of lake sturgeon to determine if these populations merit consideration and protection as ecologically significant units.
- Continued reduction of point and non-point source pollution to reduce siltation, pesticide pollution, and point-source pollutants in the watersheds inhabited by this species is needed to improve water quality and condition of spawning grounds for lake sturgeon.
- The **yellow sandshell mussel** is also a Species of Greatest Conservation Need. Because the juvenile stages of this mussel use sturgeon as a host, actions taken to preserve the lake sturgeon may aid conservation of Yellow sandshell mussel populations.

Paddlefish (*Polyodon spathula*)

Species Assessment Scores*

State rarity:	4
State threats:	4
State population trend:	3
Global abundance:	3
Global distribution:	5
Global threats:	4
Global population trend:	2
Mean Risk Score:	3.6
Area of importance:	2

* Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.



Ecological Landscape Associations
Please note that this is not a range map. Shading does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

Landscape-community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Hills	Warmwater rivers
Western Coulee and Ridges	Warmwater rivers
Western Prairie	Warmwater rivers

Threats and Issues

- Habitat loss, degredation, and fragmentation from dams threatens this species. Dams eliminated traditional spawning sites (paddlefish can live in reservoirs but need streams for spawning), altered water flow regimes, dewatered streams, and eliminated backwater areas that were important as nursery and feeding areas. Dams without fish passages inhibit or prevent movement (this species may travel hundreds of kilometers) and upstream spawning migrations, and fragment populations.
- There is potential for illegal harvest of paddlefish for caviar, particularly when caviar prices are high. The problem is exacerbated by the fact that it is hard to sex paddlefish, so all fish captured are usually killed.
- Exotic bighead and silver carp, which now have established self sustaining populations in the Mississippi River basin, may threaten this species primarily through competition for food (both are large filter feeders).
- Alteration of the Mississippi River for the purposes of commercial navigation (including lock and dam structures) and flood prevention threatens this species in a variety of ways, including limiting the extent and duration of spring floods which negatively impacts paddlefish spawning. Collisions with boats and motors are a major issue for paddlefish in the Wisconsin River, as they are often just below the surface. 15% of the fish in the Wisconsin River have major wounds and scars attributable to boats. Collisions with towboats may also kill paddlefish in the Mississippi River.

Priority Conservation Actions

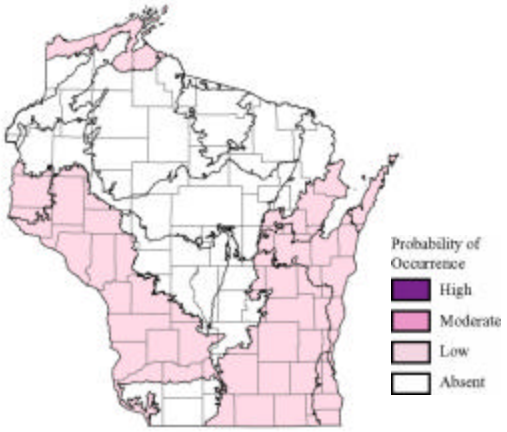
- Protection and restoration of large river habitat is needed for conservation of this species, including consideration of spawning areas (paddlefish need fast shallow water over gravel bars for spawning).
- Fish passages at dams are needed to facilitate movement, including upstream spring spawning migrations.
- The creation of no wake zones in areas of the Wisconsin River where paddlefish concentrate near the surface (such as the Prairie du Sac Dam tailwater) would benefit this species.
- Continued vigilance is needed to prevent illegal harvest of this species for caviar.
- More information on movement patterns and habitat use is needed, especially for juveniles, to aid conservation efforts targeted at this species.

American Eel (*Anguilla rostrata*)

Species Assessment Scores*

State rarity:	5
State threats:	NA
State population trend:	3
Global abundance:	2
Global distribution:	NA
Global threats:	NA
Global population trend:	4
Mean Risk Score:	3.5**
Area of importance:	1

* Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.
** Based on fewer than the standard 7 criteria.



Ecological Landscape Associations
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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Lake Michigan
Central Lake Michigan Coastal	Warmwater rivers
Northern Lake Michigan Coastal	Lake Michigan
Northern Lake Michigan Coastal	Warmwater rivers
Southeast Glacial Plains	Warmwater rivers
Southern Lake Michigan Coastal	Lake Michigan
Southern Lake Michigan Coastal	Warmwater rivers
Superior Coastal Plain	Lake Superior
Superior Coastal Plain	Warmwater rivers
Western Coulee and Ridges	Warmwater rivers
Western Prairie	Warmwater rivers

Threats and Issues

- This species lives in Great Lakes and large river habitats and migrates long distances to spawn in the Sargasso Sea. Dams without fishways eliminate (upstream) habitat for this species where juveniles feed and mature for multiple years.

Priority Conservation Actions

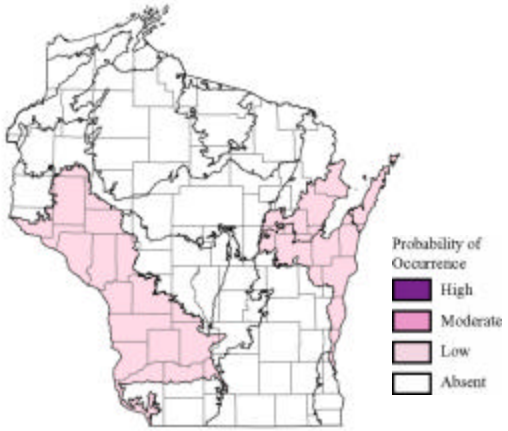
- Construction of fishways around dams is needed to allow juvenile female american eels access to their preferred upstream habitats--the muddy bottoms and still waters of large streams and lakes.
- The **rock pocketbook mussel** is also a Species of Greatest Conservation Need. Because the juvenile stages of this mussel use American eels as a host, actions taken to preserve the American eel may aid conservation of Rock pocketbook mussel populations.

Skipjack Herring (*Alosa chrysochloris*)

Species Assessment Scores*

State rarity:	5
State threats:	NA
State population trend:	2
Global abundance:	3
Global distribution:	4
Global threats:	3
Global population trend:	3
Mean Risk Score:	3.3**
Area of importance:	1

* Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.
** Based on fewer than the standard 7 criteria.



Ecological Landscape Associations
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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Lake Michigan
Central Lake Michigan Coastal	Warmwater rivers
Northern Lake Michigan Coastal	Lake Michigan
Northern Lake Michigan Coastal	Warmwater rivers
Western Coulee and Ridges	Warmwater rivers

Threats and Issues

- Dams without fishways block upstream spawning migrations of this species. The presence of dams has apparently lead to the extirpation of this species from most of upper Mississippi system.
- Information is lacking on the life cycle requirements of this species.
- Lock-and-dam structures aiding commercial navigation on the Mississippi River hinder upstream migration of skipjacks during early spring. Few manage to get upstream since they are unable to negotiate the dams or to use bypassing canals.

Priority Conservation Actions

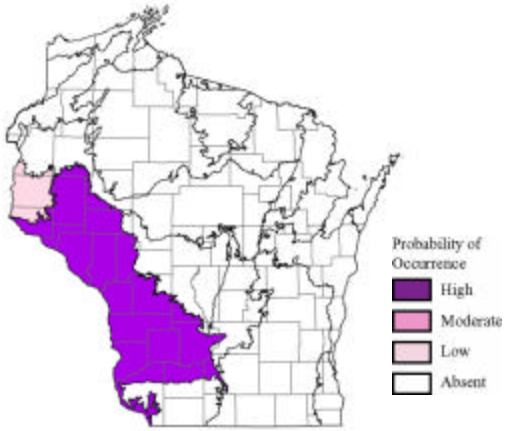
- Construction of fishways at dams on the Mississippi River are needed to allow access to upstream habitats.
- More information is needed on the life cycle of this species, including how much unimpeded water is needed to meet successful living and spawning requirements.
- The **elephant-ear and ebonyshell mussels** are also Species of Greatest Conservation Need. Because the juvenile stages of these two mussel species use skip jack herrings as a host, actions taken to preserve the skipjack herring may also aid conservation of these mussel populations.

Goldeye (*Hiodon alosoides*)

Species Assessment Scores*

State rarity:	4
State threats:	4
State population trend:	3
Global abundance:	2
Global distribution:	4
Global threats:	3
Global population trend:	3
Mean Risk Score:	3.3
Area of importance:	1

* Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.



Ecological Landscape Associations
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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Western Coulee and Ridges	Warmwater rivers
Western Prairie	Warmwater rivers

Threats and Issues

- Alterations of the the Mississippi River to facilitate commercial navigation, including lock and dam structures, may threaten this species which migrates upstream each spring to spawn in quiet, shallow turbid firm-bottomed sites.
- This species is vulnerable to heavy fishing, as it may be mistaken for the more common mooneye.

Priority Conservation Actions

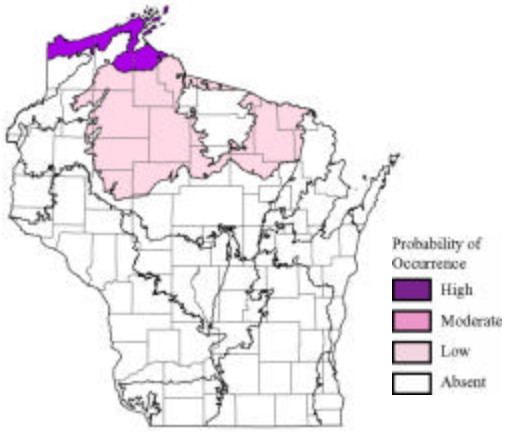
- Preservation and restoration of natural habitat on the Mississippi River and the lower reaches of its larger tributaries, including the small lakes, ponds, and marshes connected to these rivers, is needed to conserve this species.

Kiyi (*Coregonus kiyi*)

Species Assessment Scores*

State rarity:	4
State threats:	3
State population trend:	3
Global abundance:	3
Global distribution:	5
Global threats:	3
Global population trend:	3
Mean Risk Score:	3.4
Area of importance:	5

* Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.



Ecological Landscape Associations
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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
North Central Forest	Lake Superior
Superior Coastal Plain	Lake Superior

Threats and Issues

- Loss of cold deepwater areas in Lake Superior due to effects of climate change is a threat to this species, as it prefers very deep waters (100-180 m.).
- Habitat degredation in Lake Superior from a variety of causes, including contaminants and sedimentation, is a threat to this species, which is now limited in distribution to this single water body.
- Historic overfishing is among the reasons that this species was extirpated from lakes Huron, Michigan and Ontario. Though there is no current commercial fishery for this species, incidental take in other fisheries may still pose some threat to kiyis in Lake Superior.
- Competition (for food and habitat) and predation (on eggs and juveniles) from introduced exotic species such as alewife, smelt, and Pacific salmon are currently the greatest threat to this species.

Priority Conservation Actions

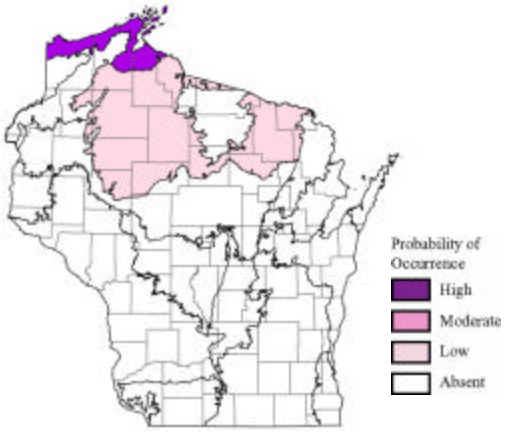
- Prevention of the introduction of new exotic species and control of existing exotic species populations (e.g., sea lamprey, alewife, rainbow smelt) is needed for conservation of this species.
- Sustainable fishery regulations are needed to insure that the kiyi population in Lake Superior is not negatively impacted by commercial fisheries targeted at other species.
- More information on abundance and changes in abundance of kiyi in Lake Superior is needed to inform management for this species, along with information about contaminant loads, locations and characteristics of spawning sites, minimum viable population sizes and the degree of hybridization which may have affected the species.

Shortjaw Cisco (*Coregonus zenithicus*)

Species Assessment Scores*

State rarity:	4
State threats:	4
State population trend:	5
Global abundance:	4
Global distribution:	5
Global threats:	4
Global population trend:	5
Mean Risk Score:	4.4
Area of importance:	5

* Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.



Ecological Landscape Associations
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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
North Central Forest	Lake Superior
Superior Coastal Plain	Lake Superior

Threats and Issues

- Loss of cold deepwater areas in Lake Superior due to effects of climate change is a threat to this species, as it prefers deep waters (generally greater than 200 ft.)
- Habitat degredation in Lake Superior from a variety of causes, including contaminants and sedimentation, is a threat to this species, which is now limited in its US distribution to this single water body.
- Historic overfishing is among the reasons that this species was extirpated from the other Great Lakes. Though there is no current commercial fishery for this species, incidental take in other fisheries may still pose some threat to shortjaw ciscoes in Lake Superior.
- Competition (for food and habitat) and predation (on eggs and juveniles) from introduced exotic species such as alewife, smelt, and Pacific salmon are thought to be the greatest threat to this species.

Priority Conservation Actions

- A management plan for this species is needed to increase populations, as the species is thought to currently be declining in Lake Superior.
- Prevention of the introduction of new exotic species and control of existing exotic species populations (e.g., sea lamprey, alewife, rainbow smelt) is needed for conservation of this species.
- Sustainable fishery regulations are needed to insure that the shortjaw cisco population in Lake Superior is not negatively impacted by commercial fisheries targeted at other species.

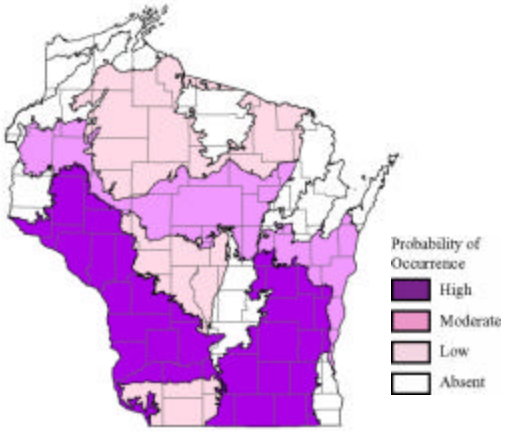
- Measures should be taken to continue the reduction of contaminants released into the Great Lakes and other inhabited lakes.
- More information on taxonomy (hard to identify) and population trends of shortjaw cisco in Lake Superior is needed to inform management for this species, along with information about contaminant loads, locations and characteristics of spawning sites, minimum viable population sizes and the degree of hybridization which may have affected the species.

Redside Dace (*Clinostomus elongatus*)

Species Assessment Scores*

State rarity:	3
State threats:	4
State population trend:	4
Global abundance:	4
Global distribution:	5
Global threats:	5
Global population trend:	4
Mean Risk Score:	4.1
Area of importance:	5

* Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.



Ecological Landscape Associations
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Landscape-community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Coolwater streams
Central Lake Michigan Coastal	Warmwater streams
Forest Transition	Coldwater streams
Forest Transition	Coolwater streams
Forest Transition	Warmwater streams
North Central Forest	Coldwater streams
North Central Forest	Coolwater streams
North Central Forest	Warmwater streams
Southeast Glacial Plains	Coldwater streams
Southeast Glacial Plains	Coolwater streams
Southeast Glacial Plains	Warmwater streams
Southwest Savanna	Warmwater streams
Western Coulee and Ridges	Coldwater streams
Western Coulee and Ridges	Coolwater streams
Western Coulee and Ridges	Warmwater streams

Threats and Issues

- Warming and loss of coolwater stream habitat due to climate change effects is a threat to this species.
- Habitat degredation and loss from watershed and riparian agriculture and urbanization are a threat to this species, whose habitat (small streams with moderate gradients and cool waters) in the southern two thirds of Wisconsin frequently coincides with intensive human use.
- Stocking of piscivorous brown trout into coolwater streams may be a threat to this species, as the disappearance of redside dace from several streams has coincided with expansion of brown trout populations into headwater stream habitats used by redside dace.
- Non-point source pollution from urban and agricultural runoff and erosion threatens this species, which is sensitive to siltation, turbidity and pollution.

Priority Conservation Actions

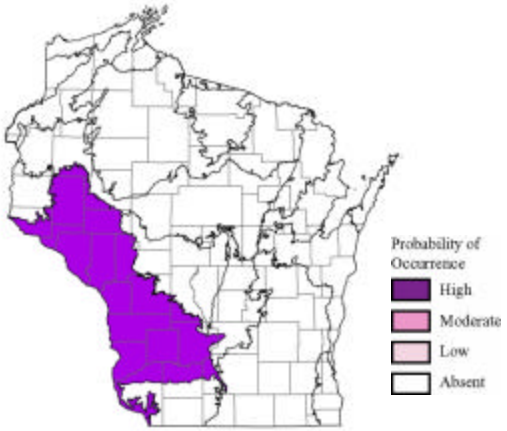
- Protection of refuge areas is needed for this species, whose isolated and disjunct populations often occur in areas of heavy pressure from development and agriculture.
- Protection and restoration of coolwater stream habitat is needed for conservation of this species.
- Control of non-point source pollution, particularly from agricultural activities in central and southern Wisconsin, is needed to restore and maintain the clear, headwater stream habitats where this species occurs.
- More information on population trends, habitat requirements, and interactions with brown trout is needed to inform conservation efforts targeted at redside dace.

Pallid Shiner (*Notropis amnis*)

Species Assessment Scores*

State rarity:	4
State threats:	5
State population trend:	5
Global abundance:	4
Global distribution:	5
Global threats:	4
Global population trend:	4
Mean Risk Score:	4.4
Area of importance:	1

* Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.



Ecological Landscape Associations
Please note that this is not a range map. Shading does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Western Coulee and Ridges	Warmwater rivers

Threats and Issues

- Rarity itself threatens this species, as it has declined to the point where is is now nearly extirpated from the state, occuring only in a few locations in the Mississippi River.
- Non-point and point source pollution within the Mississippi River basin, including agricultural runoff, threatens this species.
- Alteration of the Mississippi River for the purposes of commercial navigation threatens this species by fragmenting and degrading riverine habitat.
- Very little biological information is known about this species, hindering conservation efforts.

Priority Conservation Actions

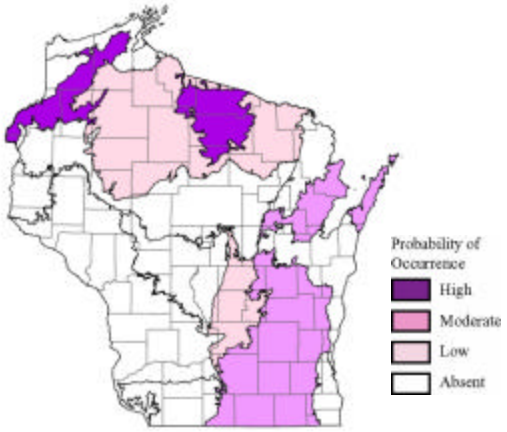
- Protection/restoration of natural habitat in Mississippi River is needed, focused on the few remaining locations where pallid shiners still occur.
- Control of point and non-point source pollution in the Mississippi River watershed is needed.
- Information on the biology of this species is needed, including potential interactions with channel shiners which occur in similar habitats and have increased in abundance during the time that pallid shiners have dramatically decreased.

Pugnose Shiner (*Notropis anogenus*)

Species Assessment Scores*

State rarity:	4
State threats:	5
State population trend:	4
Global abundance:	4
Global distribution:	5
Global threats:	4
Global population trend:	4
Mean Risk Score:	4.3
Area of importance:	5

* Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.



Ecological Landscape Associations
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Landscape-community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Hills	Inland lakes
North Central Forest	Inland lakes
North Central Forest	Warmwater streams
Northern Highland	Inland lakes
Northern Highland	Warmwater streams
Northern Lake Michigan Coastal	Inland lakes
Northern Lake Michigan Coastal	Warmwater streams
Northwest Sands	Inland lakes
Northwest Sands	Warmwater streams
Southeast Glacial Plains	Inland lakes
Southeast Glacial Plains	Warmwater streams

Threats and Issues

- Habitat degredation and loss from urbanization and agriculture along shorelines and within watersheds threatens this species, which occurs in lakes and low-gradient rivers at widely scattered locations throughout the state.
- Loss of habitat due to lakeshore development and destruction of littoral zone macrophyte communities threatens this species, which inhabits the well-vegetated shallow margins of lakes and streams.
- Non-point source pollution threatens this species, which is intolerant to turbidity and siltation.

Priority Conservation Actions

- Protection of refuge areas is needed to conserve this species, which is very sensitive to environmental modification and requires habitats often under intense development pressure (e.g., littoral zones of lakes are often cleared for beaches or boat ramps).

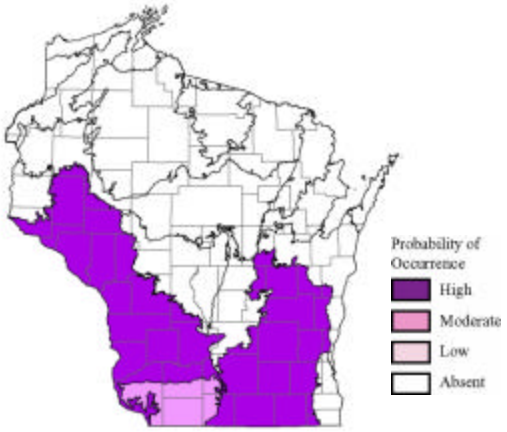
- Protection and restoration of natural lake and stream habitat, including efforts to control non-point source pollution and appropriate management of aquatic plants, are needed for conservation of this species which requires clear waters and littoral zone vegetation.
- Appropriate shoreline zoning is needed to protect the littoral habitat required by this species for feeding, shelter and spawning.
- More information on status, population trends and life history, especially habitat requirements, is needed to help inform conservation efforts targeting this species.

Ozark Minnow (*Notropis nubilus*)

Species Assessment Scores*

State rarity:	4
State threats:	4
State population trend:	3
Global abundance:	2
Global distribution:	4
Global threats:	3
Global population trend:	3
Mean Risk Score:	3.3
Area of importance:	2

* Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.



Ecological Landscape Associations
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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Forest Transition	Warmwater streams
Southeast Glacial Plains	Warmwater streams
Southwest Savanna	Warmwater streams
Western Coulee and Ridges	Warmwater streams

Threats and Issues

- Habitat degredation from heavy agric ultural land use in southern Wisconsin threatens this species, which inhabits clear, small- to medium sized low gradient streams, with gravel to rubble bottoms.
- Non-point source pollution, particularly sedimentation and runoff from extensive agricultural landuse, threatens this species which is intolerant of excessive turbidity and siltation.
- Information on the life history needs and current status of this species in Wisconsin is needed to inform conservation efforts.

Priority Conservation Actions

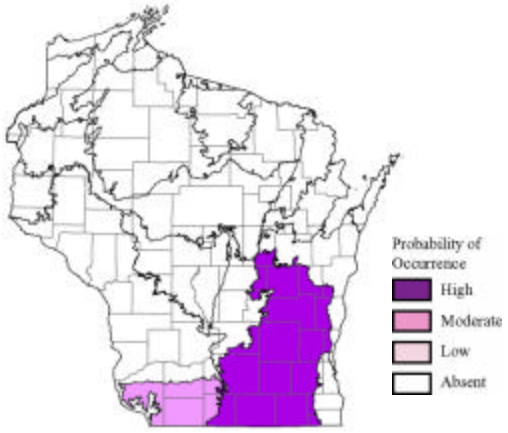
- Protection and restoration of habitat in the Mississippi River drainage basin, particularly in the areas of southern and possibly northwestern Wisconsin where the species has been documented, are needed to protect this species.
- Control of non-point source pollution, including erosion and agricultural runoff, in the Mississippi River basin where this species occurs is needed for conservation of this species.
- More information on the status and biology of this species is needed to inform and focus conservation efforts.

Gravel Chub (*Erimystax x-punctatus*)

Species Assessment Scores*

State rarity:	5
State threats:	4
State population trend:	3
Global abundance:	3
Global distribution:	4
Global threats:	3
Global population trend:	3
Mean Risk Score:	3.6
Area of importance:	2

* Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.



Ecological Landscape Associations
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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Southeast Glacial Plains	Warmwater rivers
Southwest Savanna	Warmwater rivers

Threats and Issues

- The main reason for the gravel chub's decline is a general lack of its highly specialized habitat: deep, swift waters of medium-to-large-sized rivers over pea-gravel bottom free of silt where there are no rooted aquatic plants or larger species of algae or aquatic mosses.
- Watershed agriculture and urbanization threaten this species through increasing turbidity and siltation in the highly specialized habitats preferred by this species.
- Dams fragment, destroy and degrade the specialized habitat required by this species through altered water flows and increasing siltation.

Priority Conservation Actions

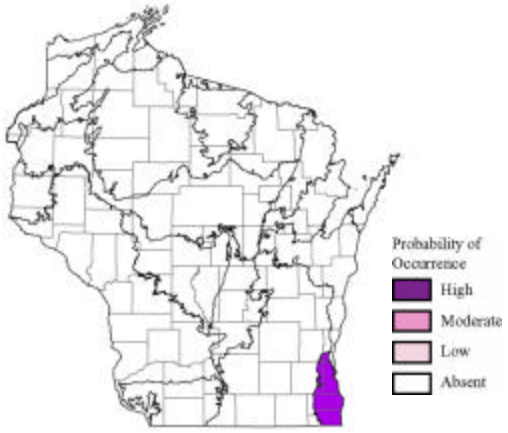
- Preservation and restoration of the specialized riverine habitats required by this species are needed, focused on efforts to decrease siltation in the Rock and Sugar-Pecatonica River basins.

Striped Shiner (*Luxilus chrysocephalus*)

Species Assessment Scores*

State rarity:	5
State threats:	5
State population trend:	5
Global abundance:	2
Global distribution:	4
Global threats:	3
Global population trend:	3
Mean Risk Score:	3.9
Area of importance:	1

* Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.



Ecological Landscape Associations
Please note that this is not a range map. Shading does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Southern Lake Michigan Coastal	Warmwater rivers

Threats and Issues

- Rarity and a very limited distribution currently threaten the continued existence of this species in the state. It is now found only in a small area of the Milwaukee River, close to the city of Milwaukee.
- Watershed urbanization and agriculture threaten this species by degrading shoreline and aquatic habitats.
- Non-point source pollution from poor agricultural practices and urbanization degrades water quality in the Milwaukee River system where this species occurs.

Priority Conservation Actions

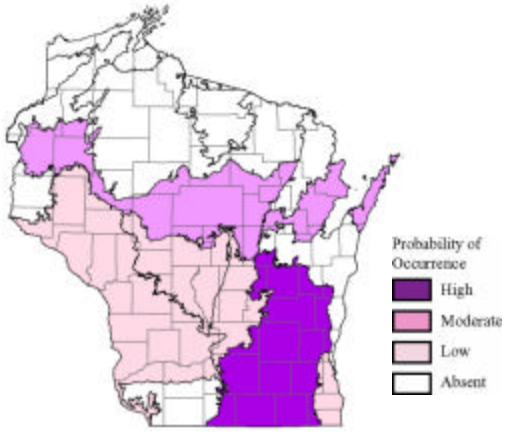
- Because of its very limited distribution in Wisconsin, protected refuges in the Milwaukee River watershed should be set aside for the protection of this species.
- Protection and restoration of natural habitat on the Milwaukee River is needed for conservation of striped shiners.
- Control of non-point source pollution in the highly developed Milwaukee River basin where this species occurs would improve habitat and water quality conditions for this species.

Redfin Shiner (*Lythrurus umbratilis*)

Species Assessment Scores*

State rarity:	3
State threats:	4
State population trend:	5
Global abundance:	2
Global distribution:	4
Global threats:	3
Global population trend:	3
Mean Risk Score:	3.4
Area of importance:	2

* Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.



Ecological Landscape Associations
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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Hills	Warmwater rivers
Forest Transition	Coolwater streams
Forest Transition	Impoundments/Reservoirs
Forest Transition	Warmwater rivers
Forest Transition	Warmwater streams
Northern Lake Michigan Coastal	Warmwater rivers
Northern Lake Michigan Coastal	Warmwater streams
Southeast Glacial Plains	Impoundments/Reservoirs
Southeast Glacial Plains	Inland lakes
Southeast Glacial Plains	Warmwater rivers
Southeast Glacial Plains	Warmwater streams
Western Coulee and Ridges	Warmwater rivers

Threats and Issues

- Habitat loss and degredation from extensive agriculure and urbanization of shorelines and watersheds throughout its range in the Mississippi River and Lake Michigan drainages is a threat to this species.
- Little information is available on the life history and habitat requirements of this species to inform conservation efforts.
- It is likely that non-point source pollution from extensive agriculture and urbanization in the southern half of Wisconsin have degraded habitat for this species.

Priority Conservation Actions

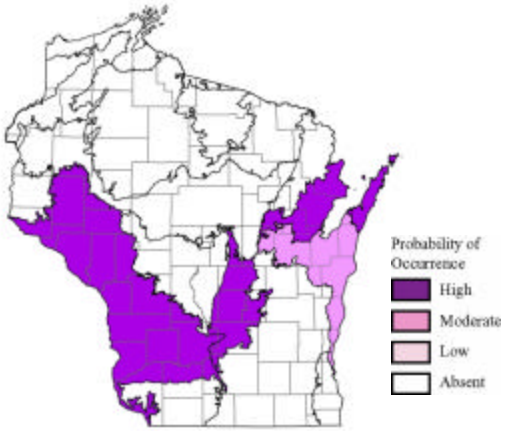
- Protection and restoration of natural stream habitats, including the pool areas of low-gradient streams that this species seems to prefer, is needed.
- More information on factors limiting abundance of this species and its sensitivity to human impacts is needed to inform and guide conservation efforts.

Shoal Chub (Speckled Chub) (*Macrhybopsis hyostoma*)

Species Assessment Scores*

State rarity:	4
State threats:	4
State population trend:	3
Global abundance:	3
Global distribution:	5
Global threats:	4
Global population trend:	4
Mean Risk Score:	3.9
Area of importance:	2

* Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.



Ecological Landscape Associations
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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Warmwater rivers
Central Sand Hills	Warmwater rivers
Northern Lake Michigan Coastal	Warmwater rivers
Western Coulee and Ridges	Warmwater rivers

Threats and Issues

- Habitat loss, degredation and fragmentation from dams threatens this large river species, which inhabits broad shallow riffles over sand or mud.
- Point and non-point source pollution of large rivers from watershed agriculture, urbanization, and other sources threatens this species.
- Alteration of the Mississippi River for the purpose of commercial navigation has eliminated habitat this species prefers (e.g., fast waters over shifting sand bottoms).
- This species is not often sampled due to its microhabitat preferences, and thus we know little about its status and biology in Wisconsin.

Priority Conservation Actions

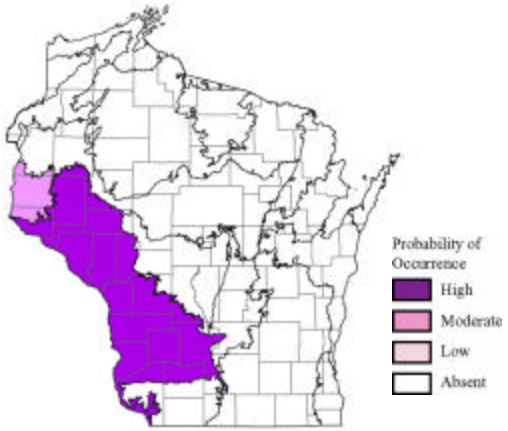
- Protection and restoration of appropriate habitat in the Mississippi, lower Wisconsin and Wolf rivers is needed for this large river specialist.
- More information on life history and population trends is needed to inform conservation efforts for this species.

Blue Sucker (*Cycleptus elongatus*)

Species Assessment Scores*

State rarity:	3
State threats:	4
State population trend:	NA
Global abundance:	4
Global distribution:	5
Global threats:	4
Global population trend:	4
Mean Risk Score:	4**
Area of importance:	5

* Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.
** Based on fewer than the standard 7 criteria.



Ecological Landscape Associations
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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Western Coulee and Ridges	Warmwater rivers
Western Prairie	Warmwater rivers

Threats and Issues

- Dams fragment large river habitat for this species, blocking upstream spawning migrations and consequently limiting distribution on tributaries of the Mississippi to the reaches below the dams.
- Impoundments on the Mississippi River and the lower reaches of its largest tributaries, where the species is found in Wisconsin, also destroy or reduce riffle habitats which the species needs for spawning.
- Basic ecological information about this species is lacking, inhibiting effective conservation and management efforts.
- This species is intolerant of pollution, turbidity and sedimentation of the large river systems that it inhabits.
- Alteration of the Mississippi River for commercial navigation (e.g., dredging, lock and dam structures) threatens this species through habitat fragmentation and degradation.

Priority Conservation Actions

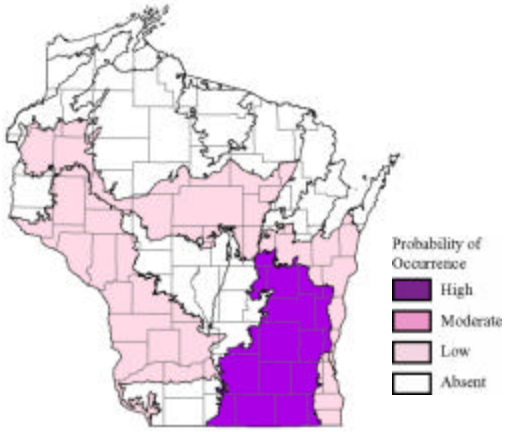
- Preserve and restore large river habitat, including protection of riffle areas where the species spawns and construction of fishways around dams to allow passage of migrating fish.
- Sources of pollution discharge and soil runoff within its range should be monitored and minimized.
- Control of point and non-point pollution is needed in the Mississippi drainage basin.
- More information on status, habitat use, and movement patterns, especially of juveniles, is needed to more effectively conserve and manage this species.

Lake Chubsucker (*Erimyzon sucetta*)

Species Assessment Scores*

State rarity:	3
State threats:	4
State population trend:	4
Global abundance:	3
Global distribution:	4
Global threats:	3
Global population trend:	3
Mean Risk Score:	3.4
Area of importance:	2

* Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.



Ecological Landscape Associations
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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Warmwater rivers
Central Lake Michigan Coastal	Warmwater streams
Forest Transition	Inland lakes
Forest Transition	Warmwater rivers
Forest Transition	Warmwater streams
Southeast Glacial Plains	Inland lakes
Southeast Glacial Plains	Warmwater rivers
Southeast Glacial Plains	Warmwater streams
Southern Lake Michigan Coastal	Inland lakes
Southern Lake Michigan Coastal	Warmwater streams
Western Coulee and Ridges	Warmwater rivers

Threats and Issues

- Habitat alteration and non-point source pollution from agriculture and urban development along shorelines and in the watershed threaten this species, which is found in southeastern and east central Wisconsin and in the lower Wisconsin River.
- Aquatic plant control efforts threaten this species, which is often found associated with dense vegetation.

Priority Conservation Actions

- Shoreline protected areas are needed for this species, as vegetated shoreline areas are needed for spawning in most habitats in which it occurs (e.g., in lakes and in sloughs and backwaters of the lower Wisconsin River).
- Watershed and riparian protection and restoration efforts are needed for conservation of this species, particularly due to the urbanization and development pressure in southeastern and east central Wisconsin. Control of non-point source pollution, particularly siltation from agricultural practices, is

likely needed for conservation of this species, as this is believed to have caused extirpation of the species in other areas.

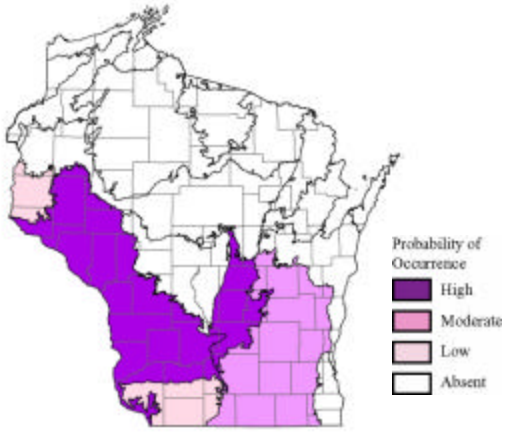
- Shoreline zoning is needed to protect natural, vegetated shoreline habitats of low-gradient streams, lakes, and oxbows of larger rivers that this species prefers.

Black Buffalo (*Ictiobus niger*)

Species Assessment Scores*

State rarity:	4
State threats:	4
State population trend:	3
Global abundance:	3
Global distribution:	4
Global threats:	3
Global population trend:	3
Mean Risk Score:	3.4
Area of importance:	2

* Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.



Ecological Landscape Associations
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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Hills	Impoundments/Reservoirs
Central Sand Hills	Warmwater rivers
Southeast Glacial Plains	Impoundments/Reservoirs
Southeast Glacial Plains	Warmwater rivers
Southwest Savanna	Impoundments/Reservoirs
Southwest Savanna	Warmwater rivers
Western Coulee and Ridges	Impoundments/Reservoirs
Western Coulee and Ridges	Warmwater rivers
Western Prairie	Impoundments/Reservoirs
Western Prairie	Warmwater rivers

Threats and Issues

- Loss, modification and fragmentation of large river habitat caused by dams in the Mississippi, Wisconsin, and Pecatonica rivers threatens this species.
- Incidental take of this species occurs in commercial fisheries on the Mississippi River.
- Better information on the biology and ecology of this species is needed to inform conservation efforts.
- Potential impacts of exotic bighead and silver carp may threaten this species. Bighead and silver carp can grow very large (to 100 and 60 pounds, respectively) and consume large amounts of zooplankton, potentially adversely impacting many native species of fish due to competition for food, habitat degradation, and alteration of food web dynamics. Both species have self sustaining populations in the Mississippi River Basin.
- Point and non-point source pollution of large rivers threatens this species, which is known to be intolerant of pollution.

- Alteration of the Mississippi River for the purposes of commercial navigation threatens this species through habitat alteration and fragmentation.

Priority Conservation Actions

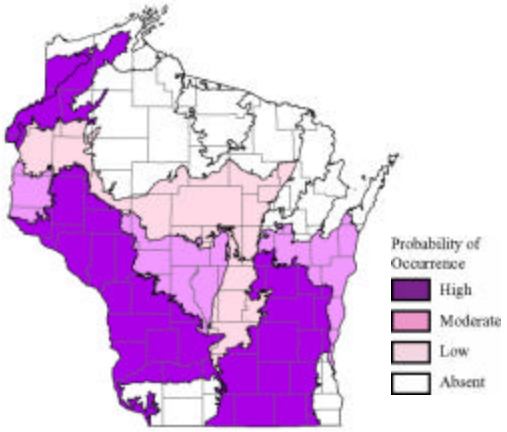
- Protection/restoration of large river habitats is needed for this large river species.
- Fish passage at dams is needed to connect fragmented habitats. Efforts are needed to control invasive species in the Mississippi River which may compete with or degrade habitat for this and many other native fish.
- Better knowledge of the taxonomy, systematics, habitat use and biology of this species is needed. The species is very difficult to identify (also hybridizes), which hampers both research and enforcement actions.

River Redhorse (*Moxostoma carinatum*)

Species Assessment Scores*

State rarity:	4
State threats:	4
State population trend:	3
Global abundance:	4
Global distribution:	5
Global threats:	4
Global population trend:	3
Mean Risk Score:	3.9
Area of importance:	3

* Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.



Ecological Landscape Associations
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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Warmwater rivers
Central Sand Hills	Warmwater rivers
Central Sand Plains	Warmwater rivers
Forest Transition	Warmwater rivers
Northwest Lowlands	Warmwater rivers
Northwest Sands	Warmwater rivers
Southeast Glacial Plains	Warmwater rivers
Western Coulee and Ridges	Warmwater rivers
Western Prairie	Warmwater rivers

Threats and Issues

- Dams eliminate and fragmenting large river habitat preferred by this species and block upstream spawning migrations.
- Non-point source pollution from watershed urbanization and agriculture degrades habitat for this species; turbidity and other forms of pollution are believed to have been the major factors behind the extirpation of this species in other areas. Both river redhorses and their major food source (molluscs) are sensitive to siltation and pollution.
- This species is also vulnerable to point source pollution because of its limited occurrence in localized areas of large rivers.
- Alterations to the Mississippi River to aid commercial navigation, including lock and dam structures, degrade habitat and limit movement of this species.
- Information on the biology, status and trends of this species is needed.

Priority Conservation Actions

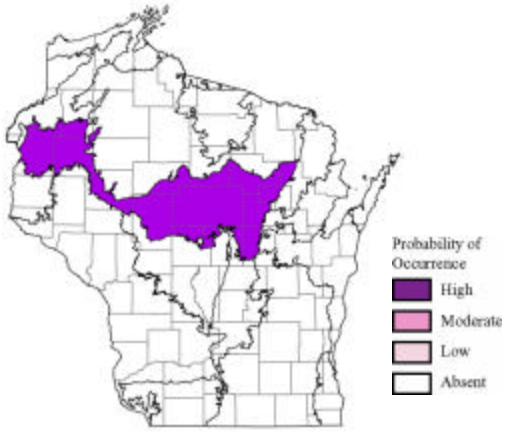
- Protection of spawning areas (riffles) in large rivers where this species occurs is needed.
- Protection and restoration of large river habitat is needed for this large river specialist, which is found in local areas where the river channel is constricted sufficiently to cause water to flow rapidly over a hard, silt-free bottom.
- Fish passage at dams is needed to facilitate movement of this species, which migrates upriver to spawn.
- More information on population trends, recruitment, and movement patterns is needed to inform conservation efforts for this species.

Black Redhorse (*Moxostoma duquesnei*)

Species Assessment Scores*

State rarity:	5
State threats:	5
State population trend:	3
Global abundance:	3
Global distribution:	4
Global threats:	3
Global population trend:	3
Mean Risk Score:	3.7
Area of importance:	2

* Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.



Ecological Landscape Associations
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Landscape-community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Forest Transition	Warmwater rivers

Threats and Issues

- Impoundment and fragmentation of riverine habitat threatens this species which migrates short distances to spawn in very specific habitats: shallow gravel or sand areas free of silt with swift water flows.
- Poor agricultural practices in the Wisconsin River basin and resulting sedimentation degrade spawning habitats for this species.

Priority Conservation Actions

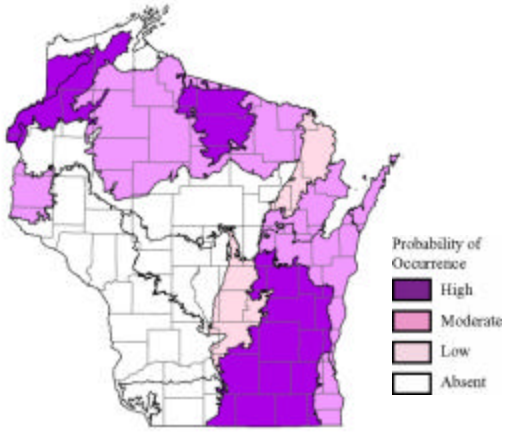
- Preservation and restoration of river habitat, focusing on areas where river size, flow and substrate conditions are appropriate for the species, in the Wisconsin River basin are needed for conservation of this species.
- Control of non-point source pollution, targeted at sedimentation from agricultural runoff into the Wisconsin River system, is needed to preserve and restore appropriate spawning habitat for this species.

Greater Redhorse (*Moxostoma valenciennesi*)

Species Assessment Scores*

State rarity:	4
State threats:	4
State population trend:	3
Global abundance:	4
Global distribution:	5
Global threats:	4
Global population trend:	3
Mean Risk Score:	3.9
Area of importance:	5

* Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.



Ecological Landscape Associations
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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Warmwater streams
North Central Forest	Warmwater streams
Northern Highland	Inland lakes
Northern Highland	Warmwater rivers
Northern Highland	Warmwater streams
Northern Lake Michigan Coastal	Warmwater streams
Northwest Lowlands	Warmwater rivers
Northwest Lowlands	Warmwater streams
Northwest Sands	Inland lakes
Northwest Sands	Warmwater rivers
Northwest Sands	Warmwater streams
Southeast Glacial Plains	Impoundments/Reservoirs
Southeast Glacial Plains	Inland lakes
Southeast Glacial Plains	Warmwater rivers
Southeast Glacial Plains	Warmwater streams
Southern Lake Michigan Coastal	Warmwater streams
Western Prairie	Warmwater streams

Threats and Issues

- Agriculture and urbanization of shorelines and watersheds threatens this species through degradation of habitat on the medium and large rivers, lakes and reservoirs where this species occurs.
- Point and non-point source pollution, including turbidity and sedimentation from agricultural runoff, threaten this species, which prefers clear waters and requires riffles with sand or gravel bottoms, free of silt, for spawning.
- Conservation and management currently is hampered by our limited knowledge of the biology of this species.

Priority Conservation Actions

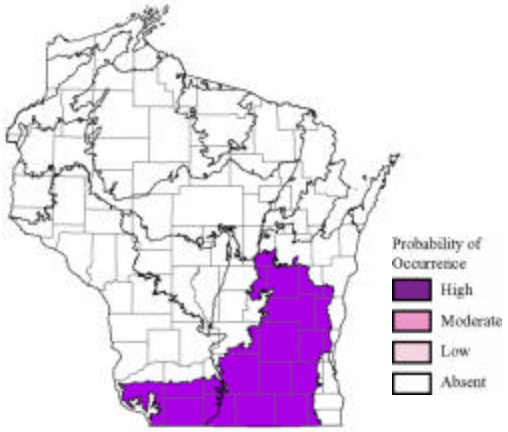
- Establishment of protected refuges for spawning areas (riffles) in streams and rivers known to harbor good populations of this species would be beneficial.
- Control of point and non-point source pollution is needed, including broad riparian buffer strips, stiff pesticide application laws, upland erosion control practices, and modern pollution control systems.
- Preservation and restoration of natural riverine and lacustrine habitat is needed to provide appropriate feeding and spawning grounds for this species which prefers moderate to fast flowing rivers and requires riffle areas free of silt for spawning.
- More information on status, population trends, life history and habitat use, especially related to reproduction and recruitment, would help inform and focus conservation efforts for this species.

Slender Madtom (*Noturus exilis*)

Species Assessment Scores*

State rarity:	4
State threats:	5
State population trend:	5
Global abundance:	2
Global distribution:	4
Global threats:	3
Global population trend:	3
Mean Risk Score:	3.7
Area of importance:	2

* Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.



Ecological Landscape Associations
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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Southeast Glacial Plains	Warmwater streams
Southwest Savanna	Warmwater streams

Threats and Issues

- Agriculture and urbanization of stream riparian areas and watersheds degrades habitat for this species, which prefers clear waters with moderate to swift currents over substrates of gravel and boulders that are free of silt.
- Loss of stream habitat to dams and improper operation of dams causing channel dewatering threaten this species.
- Non-point source pollution, including siltation and turbidity and fish kills from agricultural runoff in the Rock River basin, threaten this species.

Priority Conservation Actions

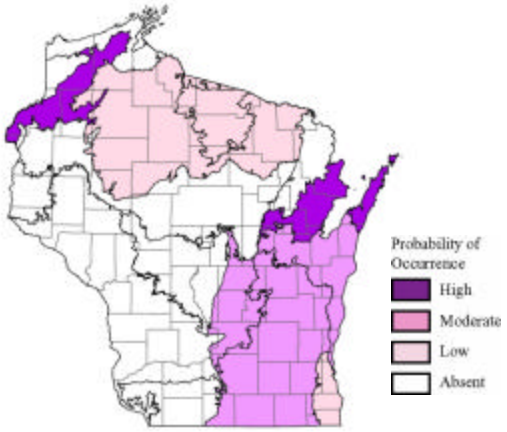
- Protection of refuge areas is needed for the few localities in the Rock River system where this species still occurs.
- Protection and restoration of natural stream areas in the Rock River basin are needed for conservation of this species in the few areas where it is still found. Reductions in non-point source pollution are needed to provide silt free spawning habitats for this species.
- More information on population trends, causes of decline, and factors limiting the abundance and distribution of slender madtoms is needed.

Banded Killifish (*Fundulus diaphanus*)

Species Assessment Scores*

State rarity:	3
State threats:	4
State population trend:	4
Global abundance:	2
Global distribution:	4
Global threats:	3
Global population trend:	4
Mean Risk Score:	3.4
Area of importance:	3

* Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.



Ecological Landscape Associations
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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Lake Michigan
Central Lake Michigan Coastal	Warmwater streams
Central Sand Hills	Inland lakes
North Central Forest	Inland lakes
Northern Highland	Inland lakes
Northern Lake Michigan Coastal	Inland lakes
Northern Lake Michigan Coastal	Lake Michigan
Northern Lake Michigan Coastal	Warmwater streams
Northwest Sands	Inland lakes
Northwest Sands	Warmwater streams
Southeast Glacial Plains	Inland lakes
Southeast Glacial Plains	Warmwater streams
Southern Lake Michigan Coastal	Lake Michigan

Threats and Issues

- Dams that do not allow for water level fluctuations that mimic natural low and high flow conditions threaten this species.
- Shoreline habitat destruction and alteration due to development pressures on the shoreline proper and a philosphy of stabilizing artificially rasied water elevations threaten this species.
- Exotic invasive plants and animals threaten this species through habitat degredation and possible alteration of food web dynamics.
- Non-point source pollution from land management practices in the watersheds surrounding the lakes and inlet and outlet streams where this species occurs threaten this species. For example, fertilization of lawns can increase phosphorus and nitrogen concentrations in lakes, potentially increasing growth of algae and aquatic plants. When aggressive invasive species such as Eurasian Watermilfoil and Curly-leaf Pondweed are present, this can lead to large alterations of habitat in these systems.

- Wave energy generated from heavy boating activity, particularly larger boats on smaller bodies of water, may degrade shoreline habitats.
- Aquatic plant control efforts threaten this species, as vegetated shoreline areas on lakes and streams that this species depends on are often cleared for beaches, access to boat ramps, and other purposes.
- Habitat loss and degredation from shoreline development, littoral zone modification of lakes, and agriculture and urbanization of shorelines and watersheds threatens this species.

Priority Conservation Actions

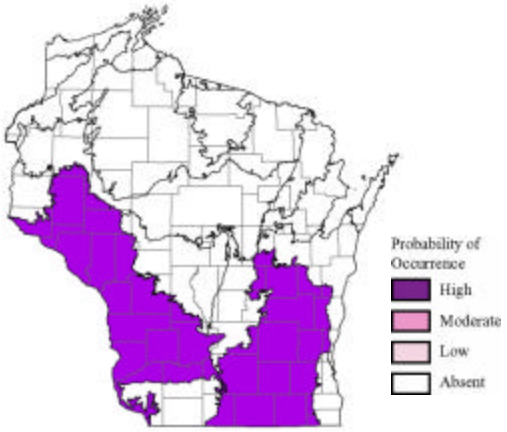
- Reduction of non-point source pollution through improved land use practices is needed in watersheds where this species occurs.
- Tax incentives that promote better stewardship of land and water resources may benefit this species.
- Protecton and restoration of natural lake and river shoreline areas and watersheds is needed for conservation of this species.
- Aquatic plant protection and restoration is needed for conservation of this species, which prefers shallow sand, gravel, or detritus-covered bottom areas where there are patches of submerged aquatic plants.
- Protective shoreline zoning is needed to protect shallow vegetated shoreline habitats that this species needs for feeding, shelter, and spawning.
- More information on status and habitat use in Wisconsin is needed to inform and focus conservation efforts.

Starhead Topminnow (*Fundulus dispar*)

Species Assessment Scores*

State rarity:	4
State threats:	4
State population trend:	4
Global abundance:	3
Global distribution:	4
Global threats:	3
Global population trend:	3
Mean Risk Score:	3.6
Area of importance:	2

* Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.



Ecological Landscape Associations
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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Southeast Glacial Plains	Inland lakes
Southeast Glacial Plains	Warmwater rivers
Southeast Glacial Plains	Warmwater streams
Western Coulee and Ridges	Warmwater rivers
Western Coulee and Ridges	Warmwater streams

Threats and Issues

- Habitat degredation and destruction from shoreline alteration due to urban and residential development and agriculture threaten this species.
- Invasive/agressive aquatic plants may degrade shoreline habitat required by this species.
- Non-point source pollution from agriculture and development within the watershed threatens this species through degredation of habitat.
- Status and distribution information is lacking for this species.

Priority Conservation Actions

- The species occurs in four disjunct areas of the Mississippi River basin in Wisconsin; establishment of refuges is needed to protect and maintain these populations.
- Protection and restoration of natural stream and shoreline habitat are needed to maintain the habitats that this species requires: quiet, clear to slightly turbid shallow backwaters with abundant submerged aquatic plants.
- Control of non-point source pollution is needed to prevent siltation and pollution of preferred shoreline habitats.
- Better aquatic plant management is needed to prevent degredation of shoreline habitats.

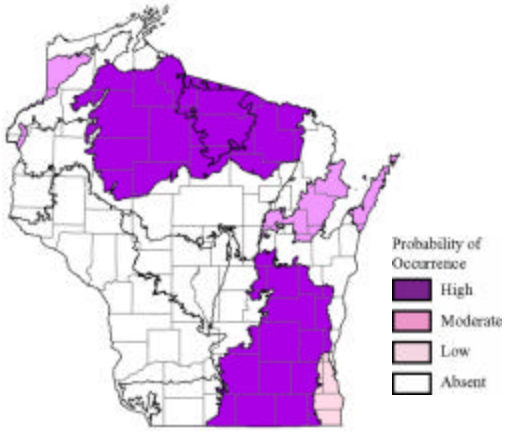
- Better shoreline zoning is needed to prevent destruction and degredation of the shoreline habitats required by this species for cover, feeding and spawning.
- More information on trends and factors limiting abundance and distribution are needed to inform and focus conservation efforts.

Longear Sunfish (*Lepomis megalotis*)

Species Assessment Scores*

State rarity:	4
State threats:	4
State population trend:	4
Global abundance:	2
Global distribution:	4
Global threats:	3
Global population trend:	3
Mean Risk Score:	3.4
Area of importance:	2

* Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.



Ecological Landscape Associations
Please note that this is not a range map. Shading does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
North Central Forest	Inland lakes
North Central Forest	Warmwater rivers
North Central Forest	Warmwater streams
Northern Highland	Inland lakes
Northern Highland	Warmwater rivers
Northern Highland	Warmwater streams
Northern Lake Michigan Coastal	Warmwater rivers
Northern Lake Michigan Coastal	Warmwater streams
Northwest Lowlands	Warmwater rivers
Southeast Glacial Plains	Inland lakes
Southeast Glacial Plains	Warmwater rivers
Southeast Glacial Plains	Warmwater streams

Threats and Issues

- Habitat degredation and loss from shoreline and watershed agriculture and urbanization threaten this species which preferes clear, shallow streams with aquatic vegetation.
- Inadvertent take because of misidentification as the more common pumpkinseed may threaten this species in specific locations.
- Non-point source pollution, including sedimentation and agricultural runoff, threatens this species which is believed to have been lost from many locations because of the effects of soil erosion and turbidity.
- Little is known about the abundance, biology and population trends of this species, which readily hybridizes with other Lepomis species and is near the northern edge of its range in Wisconsin.

Priority Conservation Actions

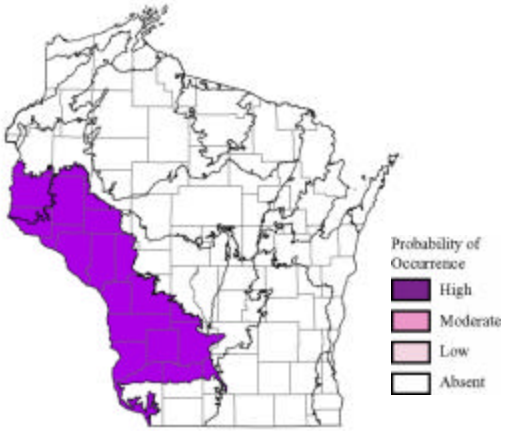
- Refuge areas along lakes and streams are needed to protect the few, disjunct locations where this species still persists in the northern and eastern thirds of Wisconsin. Refuges are particularly appropriate for this species because of its small home range (30-60 m) and because of the protection they could afford against inadvertent take due to misidentification.
- Habitat restoration in the few warmwater streams and rivers and inland lakes where this species occurs is needed.
- Control of non-point source pollution from urbanization and agricultural practices is needed for this species, which is intolerant of turbidity.
- More information on status and biology of this species is needed to refine and focus conservation efforts.

Crystal Darter (*Ammocrypta (Crystallaria) asprella*)

Species Assessment Scores*

State rarity:	5
State threats:	4
State population trend:	3
Global abundance:	5
Global distribution:	5
Global threats:	5
Global population trend:	4
Mean Risk Score:	4.4
Area of importance:	4

* Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.



Ecological Landscape Associations
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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Western Coulee and Ridges	Warmwater rivers
Western Prairie	Warmwater rivers

Threats and Issues

- Species is vulnerable to siltation and other forms of pollution in the Mississippi River system from various sources including agricultural runoff and river alteration projects (e.g., damming, dredging).
- Information is lacking on status and distribution of this species, both because it is rare throughout its range and because it is difficult to sample using conventional fish survey methods.
- Alteration of the Mississippi River for commercial navigation, including dredging and lock-and-dam structures, contributes to habitat destruction (inundation) and degradation (e.g., loss of clean sandy riffles, altered water flow, sedimentation)

Priority Conservation Actions

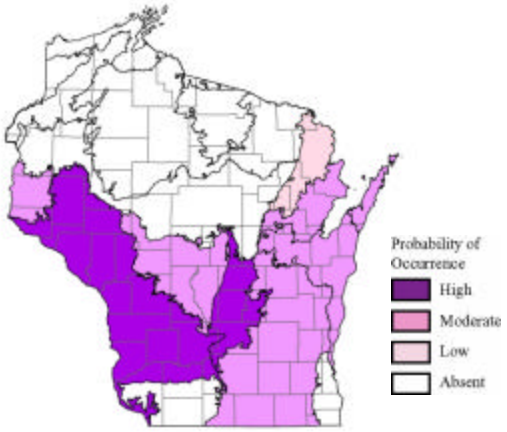
- Preservation and restoration of the large river habitat is needed, including protection/restoration of areas of clean sand bars/riffles and high currents that are preferred by this species.
- Large scale efforts are needed to reduce pollution and siltation in the Upper Mississippi River basin, including efforts to reduce agricultural runof.
- Better information on abundance and distribution in Wisconsin is needed, including checking locations of old records and degraded habitats.

Western Sand Darter (*Ammocrypta clara*)

Species Assessment Scores*

State rarity:	3
State threats:	3
State population trend:	3
Global abundance:	3
Global distribution:	5
Global threats:	4
Global population trend:	4
Mean Risk Score:	3.6
Area of importance:	4

* Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.



Ecological Landscape Associations
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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Warmwater rivers
Central Sand Hills	Warmwater rivers
Central Sand Plains	Warmwater rivers
Northeast Sands	Warmwater rivers
Northern Lake Michigan Coastal	Warmwater rivers
Southeast Glacial Plains	Warmwater rivers
Western Coulee and Ridges	Warmwater rivers
Western Prairie	Warmwater rivers

Threats and Issues

- Loss and fragmentation of large river habitat from dams threatens this species, which inhabits areas of moderate to swift current over extensive sand flats.
- Point and non-point source pollution threaten this species, which is particularly vulnerable to siltation.
- Alteration of the Mississippi River for commercial navigation purposes, including multiple lock and dam structures, has eliminated habitat for this species. This species is difficult to sample, and often not sampled due to its microhabitat preferences, and thus little information on the status and trends of this species is available in Wisconsin.

Priority Conservation Actions

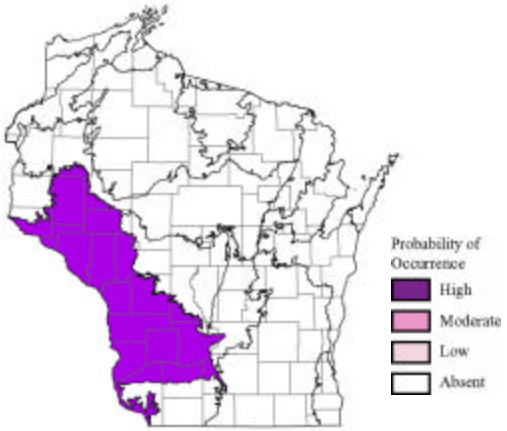
- Protection and restoration of appropriate habitat in the medium and large rivers of the Mississippi and Lake Michigan drainage basins where this species occurs is needed.
- This species would benefit from efforts to control point and non-point source pollution in the basins where it occurs, including broad riparian buffer strips, stiff pesticide regulations, upland erosion control, and modern pollution control systems.
- More information on distribution, populations trends, and limiting factors is needed to inform and focus conservation efforts targeted at this species.

Bluntnose Darter (*Etheostoma chlorosoma*)

Species Assessment Scores*

State rarity:	5
State threats:	4
State population trend:	4
Global abundance:	3
Global distribution:	4
Global threats:	3
Global population trend:	3
Mean Risk Score:	3.7
Area of importance:	1

* Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.



Ecological Landscape Associations
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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Western Coulee and Ridges	Warmwater rivers

Threats and Issues

- Alteration of the Mississippi River through dredging and lock and dam structures for commercial navigation has degraded quiet, shallow water habitats preferred by this species.
- Siltation from agricultural runoff into the Mississippi River system degrades the sandy bottom habitats preferred by this species.
- The species is vulnerable to siltation and filling of the Mississippi River backwaters and sloughs where it may occur.
- Little is known about the life history characteristics of this species, hindering conservation efforts.

Priority Conservation Actions

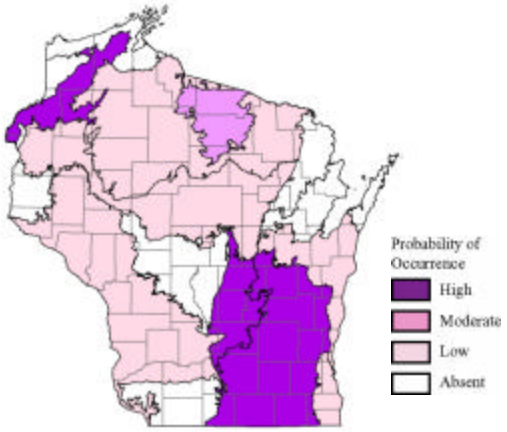
- Preservation and restoration of large river habitat is needed, focusing on changes needed to restore the quiet, sandy, shallow water habitats preferred by this species.
- Watershed wide reductions of siltation from agricultural runoff and other sources into the Upper Mississippi River system are needed.
- Research on the life history characteristics and the occurence and abundance of this species in the state is needed to inform and focus conservation efforts.

Least Darter (*Etheostoma microperca*)

Species Assessment Scores*

State rarity:	3
State threats:	4
State population trend:	4
Global abundance:	3
Global distribution:	4
Global threats:	4
Global population trend:	3
Mean Risk Score:	3.6
Area of importance:	3

* Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.



Ecological Landscape Associations
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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Hills	Inland lakes
Central Sand Hills	Warmwater rivers
Central Sand Hills	Warmwater streams
Northern Highland	Inland lakes
Northern Highland	Warmwater rivers
Northern Highland	Warmwater streams
Northwest Sands	Inland lakes
Northwest Sands	Warmwater rivers
Northwest Sands	Warmwater streams
Southeast Glacial Plains	Inland lakes
Southeast Glacial Plains	Warmwater rivers
Southeast Glacial Plains	Warmwater streams

Threats and Issues

- Shoreline and watershed agriculture and urbanization threaten this species, which inhabits vegetated areas of small lakes and clear streams scattered throughout Wisconsin.
- Aquatic plant control efforts threaten this species, which lives and spawns in areas of heavy aquatic vegetation.
- Non-point source pollution from agriculture and other activities within the watershed is a threat to this species.

Priority Conservation Actions

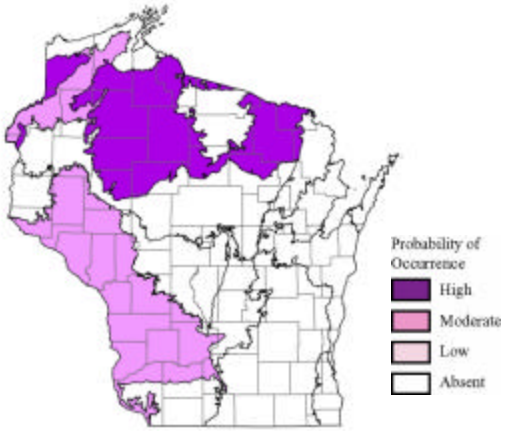
- Protected areas of lake and river shorelines are needed for conservation of this species, which needs shallow densely vegetated areas for spawning. These types of areas are often cleared of vegetation for purposes including beaches and access to boat ramps.
- Control of non-point source pollution is needed to improve water and habitat quality for this species.
- More information on the biology, status, and population trends of this species is needed.

Gilt Darter (*Percina evides*)

Species Assessment Scores*

State rarity:	4
State threats:	4
State population trend:	3
Global abundance:	3
Global distribution:	5
Global threats:	3
Global population trend:	3
Mean Risk Score:	3.6
Area of importance:	2

* Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.



Ecological Landscape Associations
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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
North Central Forest	Warmwater rivers
North Central Forest	Warmwater streams
Northwest Lowlands	Warmwater rivers
Northwest Lowlands	Warmwater streams
Northwest Sands	Warmwater rivers
Northwest Sands	Warmwater streams
Western Coulee and Ridges	Warmwater rivers
Western Coulee and Ridges	Warmwater streams

Threats and Issues

- Habitat loss (innundation), degradation and fragmentation from dams threatens this species, which requires clear rivers and streams with clean, silt-free bottoms and permanently strong currents.
- Non-point source pollution from agriculture and other activities within the Mississippi River drainage basin threatens this species.

Priority Conservation Actions

- Presevation and restoration of the natural riverine habitat required by this species (namely moderate to fast deep riffles and pools over gravel, or small boulders) is needed, focused on the St. Croix, Chippewa, and Black rivers (and their larger tributaries) where this species occurs in Wisconsin.
- Control of non-point source pollution, including siltation from watershed agriculture, is needed for conservation of this species which inhabits clean, silt-free riffle and pool areas.